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May 18, 2011

Ms. Nancy Helm
Manager, Federal and Delegated Air Programs Unit
U.S. EPA Region 10
1200 6th Avenue AWT-107
Seattle, WA 98101

Dear Ms. Helm:

Response to EPA R10 Comments on Draft PSD Permit to Increase NO_X Emission from Boiler #7 at Simpson Tacoma Kraft

Thank you for your April 20, 2011, letter describing EPA Region 10's concerns with the draft permit and TSD dated March 11, 2011, to increase nitrogen oxide (NO_X) emissions from Boiler #7 at the Simpson Tacoma Kraft (STK) facility in Tacoma, Washington.

This letter is Ecology's response to those comments. EPA's comments from the May 20 letter are provided, followed by Ecology's response. We look forward to discussing these comments and our responses at the May 23 meeting in Tacoma.

EPA Comment 1:

STK is seeking to significantly increase its NOx emission limits on Boiler #7 established under Ecology's PSD permit 06-02. Under the PSD program, a relaxation of emission limits is considered a change in method of operation. Accordingly, all regulated NSR pollutants must be evaluated to determine whether there is a significant emission increase of those pollutants. In addition to NOx, these pollutants include PM2.5, Municipal Waste Combustor (MWC) organics, metals, and acid gases, and Greenhouse Gases as provided for under 40 CFR 52.21.

Response to EPA Comment 1:

This comment makes two assumptions: (1) The adjustment of an emission limit determined by BACT is a change in the method of operation, and (2) If one emission limit determined by BACT is adjusted, then all other emission limits in the permit must be re-evaluated for PSD applicability. Ecology is not aware of PSD regulations or guidance that requires these two assumptions for this project.

The only purpose of this permitting action is to adjust a BACT limit that was incorrectly set in the PSD 06-02 permit because of bad information from a supplier about what level of NO_X a new overfired air (OFA) system would achieve. STK made the changes to the boiler in accordance with the permit application, and has operated it in accordance with the procedures permitted. STK has not used fuels and procedures beyond those permitted by PSD 06-02. Thus Ecology disagrees with EPA's position that simply adjusting an emission limit necessarily constitutes a change in the method of operation. Since the term "change in the method of operation" is not defined directly in PSD regulations, but is shaped more by the exceptions contained in the definition of major modification that say "what it is not," this difference in opinion is hard to definitively judge using logic or guidance.

No matter which position is taken on the change in the method of operation question though, if certain guidelines are met, EPA guidance specifically allows an emission limitation established by BACT to be modified without re-evaluating all other regulated pollutant BACT limitations established in the permit. The Ogden memo[1] allows this. It is also allowed by Chapter 9 of the EPA draft June 11, 1991, guidance on modifications.[2] This guidance is incorporated in our Washington State PSD regulations in WAC 173-400-750.

The discussion below will concentrate on the guidelines in the Ogden memo because it is published in the EPA Region 7 NSR database per our PSD Delegation Agreement. Each of the main guidelines of the Ogden memo are listed below (in italics if quoted directly), followed by a statement of the specific relevance of the memo to the current STK permitting action.

> **Ogden 1:** "*First and most important, the source and permitting agency must understand that the source is obligated to meet all applicable permit conditions. Conditions in the existing permit remain in effect and enforceable until such time as relief may be granted (as in the case of a revised permit being issued).*"
>
> **Relevance to STK:** STK and Ecology have acknowledged that STK is obligated to meet all applicable permit conditions. Industrial Section issued a NOV with conditions that are intended to bring boiler emissions into compliance through issuance of an amended permit with a revised NO_X limit.
>
> **Ogden 2:** "*The BACT guidance described in this memorandum is applicable only if EPA finds that the BACT determination in the original permit is inappropriate.*"
>
> **Relevance to STK:** Ecology, operating under its delegation agreement with EPA, has been working with STK and the Industrial Section to investigate whether STK could do some action to meet the current NO_X limit. After much effort over many months, it is clear to Ecology that STK cannot meet the NO_X limit established in the 2006 permit using the control techniques used to establish the BACT emission limitation.

[1] Available on the Region 7 NSR database as ogden.pdf.
[2] Available in the McCutchen PSD references as document 17G.

Ogden 3: "*The units were constructed in conformity with the modified permit and subjected to compliance testing…*"

Relevance to STK: STK constructed the boiler modifications in conformity with PSD 06-02, and performance tests were done on December 23 and 24, 2009. As expected from the permit required CEM system data, these tests indicated noncompliance with the NO_X BACT limit (0.28 lb/MMBtu test result vs. 0.20 lb/MMBtu BACT limit). CO was also over its limit, but STK showed Ecology's Industrial Section that fuel variations caused this instantaneous exceedance, and CEM data, proved that STK was able to meet this CO limit on a 30-day rolling average. As discussed above, STK is not able to meet the 0.020 lb/MMBtu NO_X limit established in PSD 06-02.

Ogden 4: Memo applicability "*…assumes that errors, faulty data, or incorrect assumptions contained in the original or modified permit applications have resulted in what may be inappropriate BACT emission levels and unpermitted significant emissions, and there is no indication that the applicant intentionally acted to misrepresent or conceal data in their original and modified permit applications and BACT analysis."*

Relevance to STK: The NO_X exceedance occurred because the new OFA system did not work as well as the system supplier promised. This is an incorrect assumption that was made in the original PSD application. Ecology has no information to suggest that STK misrepresented or concealed information on this issue in any way.

Ogden 5: "*Any time a permit limit founded in BACT is being considered for revision, a corresponding reevaluation (or reopening) of the original BACT determination is necessary.*"

Relevance to STK: STK brought this exceedance issue to Ecology's attention in a timely manner. The response action that was jointly approved by both STK and Ecology was that STK would request a PSD modification, and at the same time continue to minimize NO_X emissions. This agreement was memorialized in the Agreed Order No. 7688. STK submitted an application request that evaluated NO_X emissions (both impacts and BACT) as if the evaluation had been presented in the original application. The evaluation did not just look at the NO_X increase requested by the amendment, but the total NO_X increase requested by the original permit plus the amendment request.

Ogden 6: *"…prior to any attempt to revise or readjust an existing BACT limit, the source has an initial obligation to comply with the permit. At a minimum the source should be required to investigate and report to the permitting agency all available options to reduce emissions to a lower (if not the permitted) level.*"

Relevance to STK: STK agreed that they had the obligation to comply with the permit. Ecology believes that STK took all reasonable steps to keep NO_X emissions within permitted limits, but eventually determined that STK cannot meet the currently permitted NO_X limit.

The efforts STK made to reduce NO_X emissions were included in the PSD modification application request as Chapter 5.

Ogden 7: "*If sufficient emission reductions down to the permitted level cannot be reasonably achieved, then a reevaluation of the permit may be warranted. In the process of reevaluating BACT, current BACT technology and requirements must be considered*."

Relevance to STK: The application submitted by STK to modify the NO_X limit included a full top down BACT analysis for NO_X and a revised Class I and Class II impacts analysis, and an ozone impacts analysis.

Ogden 8: "*If a revision to the permit is determined to be appropriate, the revision must also address all other PSD requirements which may be affected by an allowable increase in permitted or newly regulated emissions (eg., protection of the standards and increments, additional impacts, monitoring).*"

Relevance to STK: STK's application did include a fully revised NAAQS analysis including the new 1-hour NO_X NAAQS. Increment consumption was evaluated. A new ozone impacts analysis was done. A Class I AQRV analysis was also done.

All emissions from the STK boiler up to the current date are due to burning fuels as permitted by the PSD 06-02. This means that the NO_X and other emissions from combustion of the various fuels were permitted by that PSD. No railroad ties have been burned to date. Burning railroad ties is a future capability, but no railroad tie burning has contributed to the emissions being considered by this permitting action. STK has stated this verbally, and has been asked to submit this information in a written letter.

In summary, because STK has met the guidelines of the Ogden memo, Ecology believes that limiting the current permitting action to a change in the NO_X BACT limit is appropriate.

EPA Comment 2:

For any significant net emission increases of PM2.5, SO2, and/or NOx, Ecology would need to apply nonattainment New Source Review (NSR) to these pollutants as the STK facility is located in a PM2.5 nonattainment area.

Response to EPA Comment 2:

As discussed above, Ecology believes that this permitting action is appropriately limited to re-evaluating BACT for NO_X. While NO_X is a precursor for $PM_{2.5}$, EPA indicated on January 7, 2010, that due to the current status of precursor modeling, evaluation of NO_X as a precursor was not required. Recent discussions with Ecology modeling staff confirm that today's precursor modeling tools are very similar to those available when EPA made this determination. This

indicates to Ecology that there are no applicable pollutants for nonattainment NSR in this permitting action.

EPA Comment 3:

STK needs to provide an inventory of all the materials and fuels, regardless of quantity, burned in Boiler #7 prior to and after the various boiler changes including the time periods during calendar years 2004 and 2005, and July 2009 to the present. This information needs to include the composition, quantities, and combinations, in which the different materials and fuels are burned and how these fuels and materials are processed into the boiler (e.g., how the different gas, liquid, and solid materials and fuels are combined and fed into the boiler). This information is necessary to determine the applicable NSPS and NESHAP standards in order to properly determine the applicable regulated pollutants, best available control technology (BACT), and maximum degree of pollutant reduction associated with BACT. STK also needs to provide the names of the suppliers of all materials and fuels used and the necessary information to contact and verify with them the sourcing of their feedstock used in the materials and fuels generated. STK has indicated that the materials and fuels burned include but are not limited to: natural gas, used oil, painted wood, urban wood, construction and demolition (C&D) wood, creosote-treated wood (e.g., old railroad ties and utility poles), fuel derived from STK's waste paper and cardboard recycling operation, old corrugated cardboard rejects, sludge generated from wood chips, sludge generated from recycled cardboard and paper, wood waste buried in old lumber mill sites, and wood from logs transported and stored in salt water.

Response to EPA Comment 3:

The first part of this comment requests a detailed inventory of fuels to compare fuels burned during the permit's baseline years to fuels currently burned in order to determine the applicable NSPS and NESHAP standards and how they might affect BACT technology and BACT limitation. STK confirms that the components in the boiler's current fuel mix are the same as the fuel components during the baseline years and the fuel mix permitted in the original permit. Of course, STK has minimized the use of fossil fuels, but no additional fuel category has been combusted. This includes not burning any railroad ties as allowed by Ecology's Industrial Section's Order No. 6161 issued on December 31, 2008.

Regarding applicable NSPS and NESHAPs, the initial PSD application established that the boiler is subject to the 40 CFR 60 Subpart Db NSPS. The boiler will be subject to the new Major Source Boiler MACT, and potentially could be subject to the CISWI rule, but this has not been determined. However, it is unclear to Ecology how the provisions of these rules could affect NO_X emissions.

This comment requests STK "to provide the names of the suppliers of all materials and fuels used and the necessary information to contact and verify with them the sourcing of their feedstock used in the materials and fuels generated." Ecology feels this request for information is far more detailed than required for a permitting action. In our opinion, a permitting action

does not require this level of scrutiny and to independently contact fuel suppliers to independently confirm whether STK has misrepresented its fuel, or failed to supply available analysis information. Ecology did request additional information on STK fuels, and STK responded to this request in a letter dated December 20, 2010.

This comment claims, "STK has indicated that the materials and fuels burned include but are not limited to . . . ." Ecology is not familiar with this fuels list being supplied in the permitting materials. STK has specifically stated that they have not burned any railroad ties up to this date, but do acknowledge they have permission to do so. Ecology requests that EPA provide any additional information it has regarding fuels burned in Boiler #7.

EPA Comment 4:

STK needs to provide the names of the suppliers and the specific sources of their salt-laden hog fuel so that the chlorine content of the fuel currently used can be verified. To the extent the information is considered confidential, STK can make a claim of business confidentiality along with their submittal of the information, but a claim of confidentiality cannot be used to avoid submitting information. STK should consult with EPA and Ecology staff for specific guidance on establishing claims of confidentiality.

Response to EPA Comment 4:

This subject is discussed on page 17 of the TSD, and Table 3-5 summarizes the fuel chloride content information available on several fuels at several sites. It was discussed further in the previously referenced December 20, 2010, STK letter responding to Ecology's request for further information.

While additional information on the salt content of all fuels would be nice to have, in general Ecology feels that the high Cl issue is a real one and having detailed information on individual fuel suppliers won't solve that issue.

An overriding concern is that all elements of the fuel change would need to be implemented to avoid a white plume issue, including dealing with the sludge portion of the fuel mix. Since Tacoma City Water has told STK that they will not supply additional fresh water to provide the cooling, STK cannot stop using high salinity water from Commencement Bay as cooling water. Thus the high salinity sludge would have to be landfilled instead of being burned in Boiler #7. The cost effects of all of these fuel change actions when added to the actual SNCR installation and operating costs add up to an estimated annualized cost of $12,758 per ton of NO_X removed, which is not cost effective for BACT.

EPA Comment 5:

STK needs to provide contact information regarding the water utility so that the limitations of its use and cost can be verified. Results from salinity testing of the non-municipal water currently

being used in the sludge process, the location of the water in-take, and the quantities in which this water supply is being used are needed to determine the current chloride content of the sludge being generated and incinerated in Boiler #7. All direct testing of the chloride content of this sludge since July 2009 should also be provided.

Response to EPA Comment 5:

STK uses City of Tacoma Water and will provide a contact name.

STK is located at the mouth of the Puyallup River. It gets its cooling water from an intake that is low enough to always contain brackish bay water, not fresh water. The salinity of Commencement Bay is about 28.4 parts per thousand. This varies with location about ±0.5. That figure maximizes the salt content of the cooling water. STK uses up to six million gallons per day of bay water for cooling per the December 20, 2010 letter.

As an additional piece of information, in Washington's Dioxin assessment (Ecology publication No. 98-320), the STK fuel had the highest estimated saltiness of Washington State hog fuel boilers (50% using the scale in this analysis, Table 4, Hog Fuel Boilers, pg. 23). The Washington Wood Boiler Database from over 10 years ago also supports this conclusion.

EPA Comment 6:

Detailed cost information with respect to the evaluation of all BACT controls must be provided. The source of that cost information must also to be provided to facilitate the verification of the information. References for the many technical details included in the TSD discussing the various BACT options need to be provided to allow for their verification.

Response to EPA Comment 6:

Cost estimates made by STK were done using a combination of vendor quotes and the OAQPS Control Cost Manual. The original application's cost tables (included as part of Appendix A, Tables A1-A7) were updated to cover this permitting action. More detailed cost information for fuel conversion costs, the wet scrubber option, and SNCR were included in STK's December 20, 2010, letter and in an Excel file labled SNCR Cost 2011-01-20. Fuels and scrubber cost are summarized in the draft TSD on page 20. Ecology modified STK's SNCR cost calculations (method given in Excel file labeled CSNCR Costs 2011-01-20 bob variations.xlsx) that are summarized on page 22 of the TSD.

For SNCR, Fuel Tech provided the vendor quote for the primary equipment, and then used the OAQPS Control Cost Manual methods to determine the annualized cost on a dollars/ton basis. Ecology reviewed these calculations and found no reason to further investigate the information provided by STK. Ecology used STK's information to independently calculate the cost effectiveness of reducing NO_X from 0.30 to 0.15 lb/MMBtu NO_X. Note that SNCR installation and operation alone (without the fuel changes) was determined to be cost effective.

Similarly, for the cost estimate of the wet scrubber installation, a combination of vendor quotes, in-house engineering, and OAQPS Control Cost Manual procedures were used to estimate the annualized cost on a dollars/ton basis. This wet scrubber costing information was included in the STK December 20, 2010, letter written in response to my e-mail information request on November 10, 2010.

EPA Comment 7:

STK has evaluated some acid-gas controls to control hydrogen chloride emissions associated with the salt-laden wood and sludge in Boiler #7. In their analysis STK needs to include all applicable acid-gas controls provided for under EPA's top-down analysis. These controls include but are not limited to dry scrubbing such as sorbent injection and spray drying.

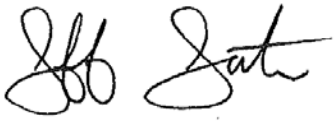
Response to EPA Comment 7:

The scrubber analysis did evaluate several types of scrubbers, including packed bed, venturi, and even the two stage condensing economizer. This information begins on page 20 of the TSD in the section "Option 2: Discussion of Scrubbing the Ammonium Chloride Plume."

While sorbent injection and spray drying for acid gas control has been used on utility boilers and some other processes for SO_2 control, Ecology has not located an instance of their use on pulp and paper hog fuel boilers to control acid gases. There are no entries for this technology on wood fired hog fuel boilers in the RBLC. Because the acid gas concentrations are so dilute in the gas stream, the technical feasibility of sorbent injection and spray drying is questionable. If EPA is aware of examples of acid gas controls that are relevant here, Ecology requests that EPA share this information.

Ecology looks forward to discussing these EPA comments and our responses in the meeting scheduled at 1:00 p.m. on Monday May 23, 2011, at the City of Tacoma Central Wastewater Treatment Plant.

Sincerely,



Jeff Johnston, PhD
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By e-mail